COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES
Women in Science & Engineering

Bio/Diversity Project
Environmental Photography

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Grade Level: 6th grade – 8th grade

Common Core Standard:	• *CCSS.ELA-Literacy.CCRA.W.7.: Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.*
Content Objective: Science	• *Students will be able to use photography as a tool for scientific research (iNaturalist).* • *Students will be able to take clear and meaningful images for persuasive and educational storytelling.*
Language Objective: (Optional)	• *Students will write observations of plant species that can be understood by other students or scientists of any age.* • *Students will translate knowledge gained from their photographs to detailed and written scientific descriptions of the species.*

Vocabulary	**Materials**
• Characterize • Diurnal • Environment • Identify • Nocturnal • Photographer • Pollinator • Predator • Prey • Variable	• Cameras (DSLR, iPhone, iPad, disposable) • Journals or paper • Pencil

Seasonality: (If more specificity is required, please note date/time range under the season)

The goal is to practice photography of species, which requires species variety and enough lighting to take photographs. If this is a one-time lesson and the students are new to photography then Spring would be an ideal time to complete the lesson because more species will be visible and in bloom. However, it would also be great to do this activity over different seasons so that students can compare and contrast the species that they find.

Monsoons July-Sept.	Autumn Oct.-Nov.	Winter Dec.- Feb.	**Spring** **Mar.-Apr.**	Dry Summer May-June

Guiding Questions:

- What should an environmental photographer take pictures of? Do they have to be a conservationist or an environmentalist?
- Can a photographer be a scientist?
- Are photographs that include humans still environmental? Are humans part of the environment?
- What can pictures convey that words can't?
- How can pictures document environmental change?

Engagement/Introductory Activity:

- Introduce two photographers (e.g. Joel Sartore and James Balog) and explain what their jobs are as environmental photographers.
- Compare and contrast the responsibilities of their jobs:
    - Joel Sartore takes photographs of endangered and unique species as a form of art, documentation, and to protect the species.
    - James Balog has taken pictures showing the effects of climate change, like the melting of glaciers as a form of visual research.
- Additional activity: either allow students to choose an article or provide them with a National Geographic article to read. Ask them to journal about how the photographs help the author convey their story.

Exploratory Activity:

Practice taking photographs of different plant species (these can be brought into the class or the students can go outside to find them)

- Place one plant on each table
- Students will take at least 3 pictures of the plant (at varying distances)
- Students will draw the species and write down characteristics of the plant (color, texture, size, etc.)
- Rotate after 5-10min
- If possible, provide the students with different types of cameras at the different tables

Explain:

Discuss the applications of this activity with the students. This lesson can be used as an introduction to learning about ecology, studying similarities/differences in plant species, and using iNaturalist, and can also be activity for creative and artistic expression. Taking photographs is important in identifying species, observing change, and documenting events. Students should be able to associate the observations they have made of the plants to the observation work that scientists perform in the field.

Extension Activity/Questions:

Two possible extension activities:

1. National Geographic Article
    - Students will choose an environmental problem in the world today (e.g. sea level rise, oil spills, extinction, deforestation, etc.) and will brainstorm about what pictures might be useful to telling a story about the problem.
    - Each student will write a 1-2 page article persuading the reader that the issue is important to today's society; each article must contain at least one supporting picture.
2. Bioblitz (find WISE lessons on bioblitzes at http://wise.arizona.edu/sbip-educator-resources)
    - Apply the photography techniques learned in this lesson to species identification.
    - Take multiple pictures at varying distances of different plant/animal/insect species; the goal is to take clear images that the audience can use for research-grade purposes.

Evaluation Activity:

Take-home bioblitz

- Students will take photos of plant/animal/insect species in their backyards, and will compare the species they find with an iNaturalist guide such as "Sonoran Desert Plants and Wildlife".
- Students will upload the pictures to iNaturalist and then ID at least 5 other students images.
- Each student will write a brief reflection on their bioblitz experience (1-2 paragraphs). Ask them to include observations of their species and why they think photographing species and identifying them is an important part of scientific research.